United States
Department of
Agriculture

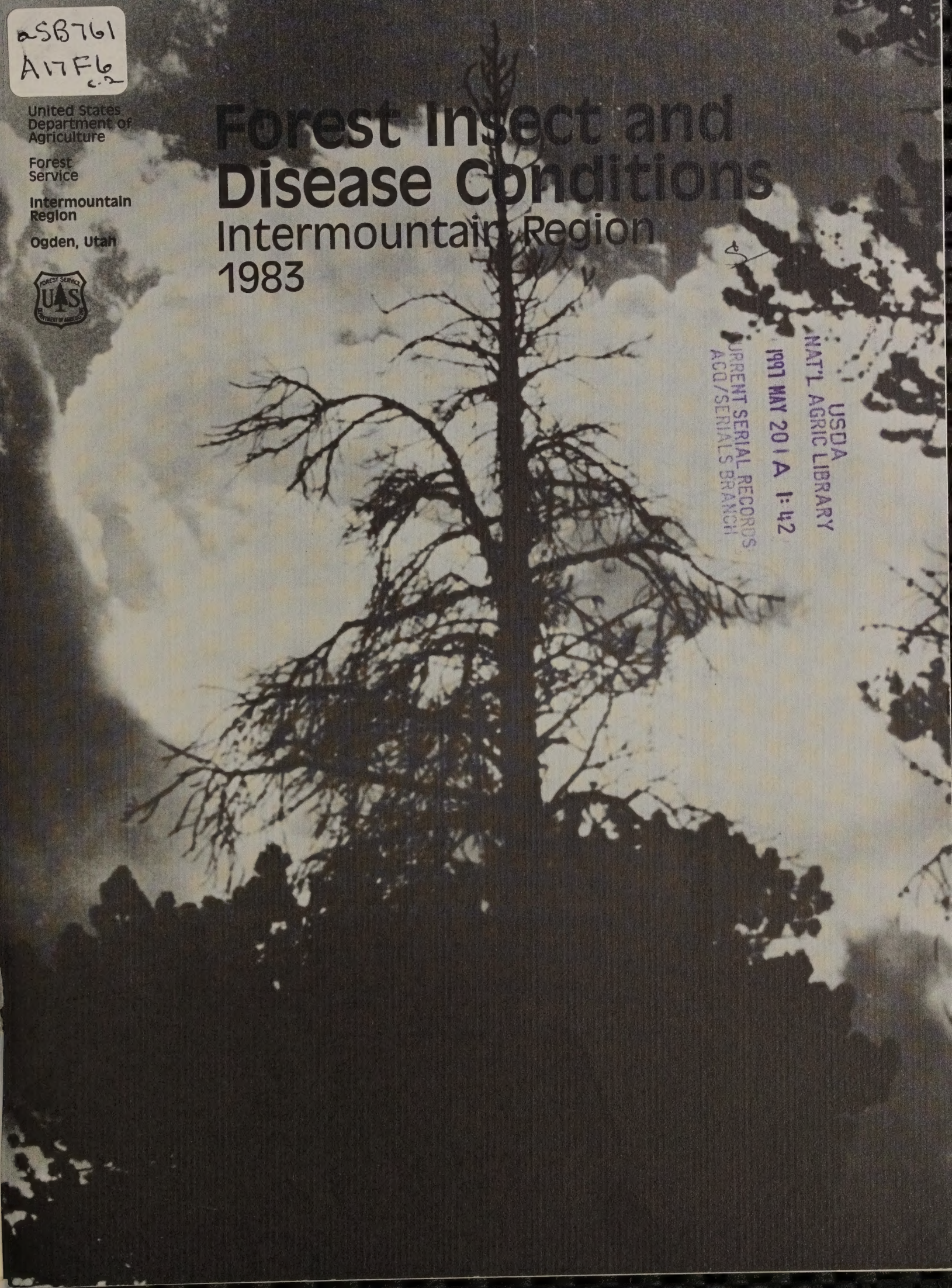
Forest
Service

Intermountain
Region

Ogden, Utah

Forest Insect and Disease Conditions

Intermountain Region 1983



COVER STORY

Name that pest!

Cover photo depicts lodgepole pine affected by:

A. Dwarf mistletoe
B. Pine engraver beetle
C. Comandra rust
D. Mountain pine beetle
E. Porcupines
F. Lightning
G. Root rot
H. All of the above
I. None of the above

Answer on inside of back cover.

FOREST INSECT AND DISEASE CONDITIONS

Intermountain Region
1983
Compiled by
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RESUMÉ OF CONDITIONS

Mountain pine beetle continued to be the most significant insect pest in the Intermountain Region. In 1983, approximately 1.4 million trees were killed by the beetle. Although beetle activity decreased in southeastern Idaho, populations elsewhere in the Region intensified.

Spruce beetle populations decreased in 1983. Localized pockets of spruce trees were killed on the Uinta, Bridger-Teton, Fishlake, and Manti-LaSal NF's.

Western spruce budworm increased in extent and intensity in Idaho, Utah, and western Wyoming. The budworm defoliation covered approximately 2.9 million acres in 1983.

Pine butterfly defoliated approximately 16,280 acres of ponderosa pine on the Boise, Payette, and Salmon NF's in 1983. Flights of the conspicuous white butterflies were observed throughout central Idaho during late summer.

Defoliation caused by the Douglas-fir tussock moth again increased in 1983. Over 14,200 acres of Douglas-fir were infested in the Owyhee Mountains.

Dwarf mistletoes continued to significantly affect growth of their host species throughout the Region. Detection of existing root disease problems in spruce, fir, Douglas-fir, and pine stands indicate the incidence of these diseases is increasing.

Mountain pine beetle, *Dendroctonus ponderosae* Hopkins

Northeastern Utah continued to sustain the heaviest tree mortality in the Intermountain Region. Mountain pine beetle killed 1,265,514 lodgepole pine on the Ashley NF and 80,317 lodgepole pine on the Wasatch NF in 1983. Although the number of dead trees declined on each Forest, the beetle activity expanded to new areas in 1983. Mortality centers should expand rapidly on these Forests in 1984. The Uinta NF, also in northeastern Utah experienced an increase in beetle activity in lodgepole pine stands along the west fork of the Duchesne River. Mountain pine beetle activity has declined in the ponderosa pine type in Utah on the Dixie, Fishlake, and Manti-Lasal NF's.

Mountain pine beetle activity decreased dramatically across southern Idaho in 1983 killing fewer than 40,000 lodgepole and ponderosa pine trees. Major downward trends occurred on the Boise, Payette, Sawtooth, and Targhee NF's. On the Boise NF the major infestation persists in the Clear Creek drainage with small group mortality elsewhere on the Forest. Much of the decrease in beetle activity on the Payette NF was due to the collapse of the Paddy Flat infestation and decreases in mortality along the Payette River south of McCall, Idaho. As in previous years, tree mortality on the Sawtooth NF is concentrated along the Big Wood River from Galena Summit south to Ketchum, Idaho, Baker Creek, and Warm Springs Creek from Dollarhide Summit downstream to Ketchum. On the Targhee NF active infestations persist on the west side of the Teton Mountains from Badger Creek south to Teton Creek. Elsewhere significant mortality is present along the Centennial Mountains from Spencer, Idaho, east to Island Park Reservoir and north to the Henry's Lake area.

Mountain pine beetle activity increased on the Caribou, Challis, and Salmon NF's. It remains the most serious tree killer on the Caribou NF with almost 15,000 lodgepole pines killed. Activity is concentrated along the Salmon River and in the Camas Creek drainage on the Challis and Salmon NF's.

In Wyoming, beetle activity and resultant lodgepole pine mortality has decreased significantly. The greatest amount of tree mortality on the Bridger-Teton NF continued to occur in the Gros Ventre River drainage near Goosewing Guard Station.

Specific mortality figures, as noted by aerial detection surveys, are found in Table 1 and the status of the infestations is available in Table 2. Locations of major infestations throughout the Region are shown in Figure 1.

Douglas-fir beetle, *Dendroctonus pseudosugae* Hopkins

Large pockets of Douglas-fir mortality caused by Douglas-fir beetle were observed on the Bridger-Teton NF in western Wyoming. Mortality occurred on 580 acres north of Blackrock Guard Station from Davis Hill east to Turpin Meadows; and on 400 acres east of Hoback Junction in Little Horse Creek, Camp Creek, and Poison Creek.

Douglas-fir beetle activity was much the same as in 1982 across southern Idaho and Utah. Infestations were generally static to declining except on the Boise NF where tree mortality increased to over 300 trees, and the Manti-LaSal NF where tree mortality increased to 224 trees. Specific mortality figures, as noted by aerial detection surveys, are found in Table 1.

TABLE 1. Number of trees killed by bark beetles as determined by aerial detection survey - Intermountain Region - 1982-1983.

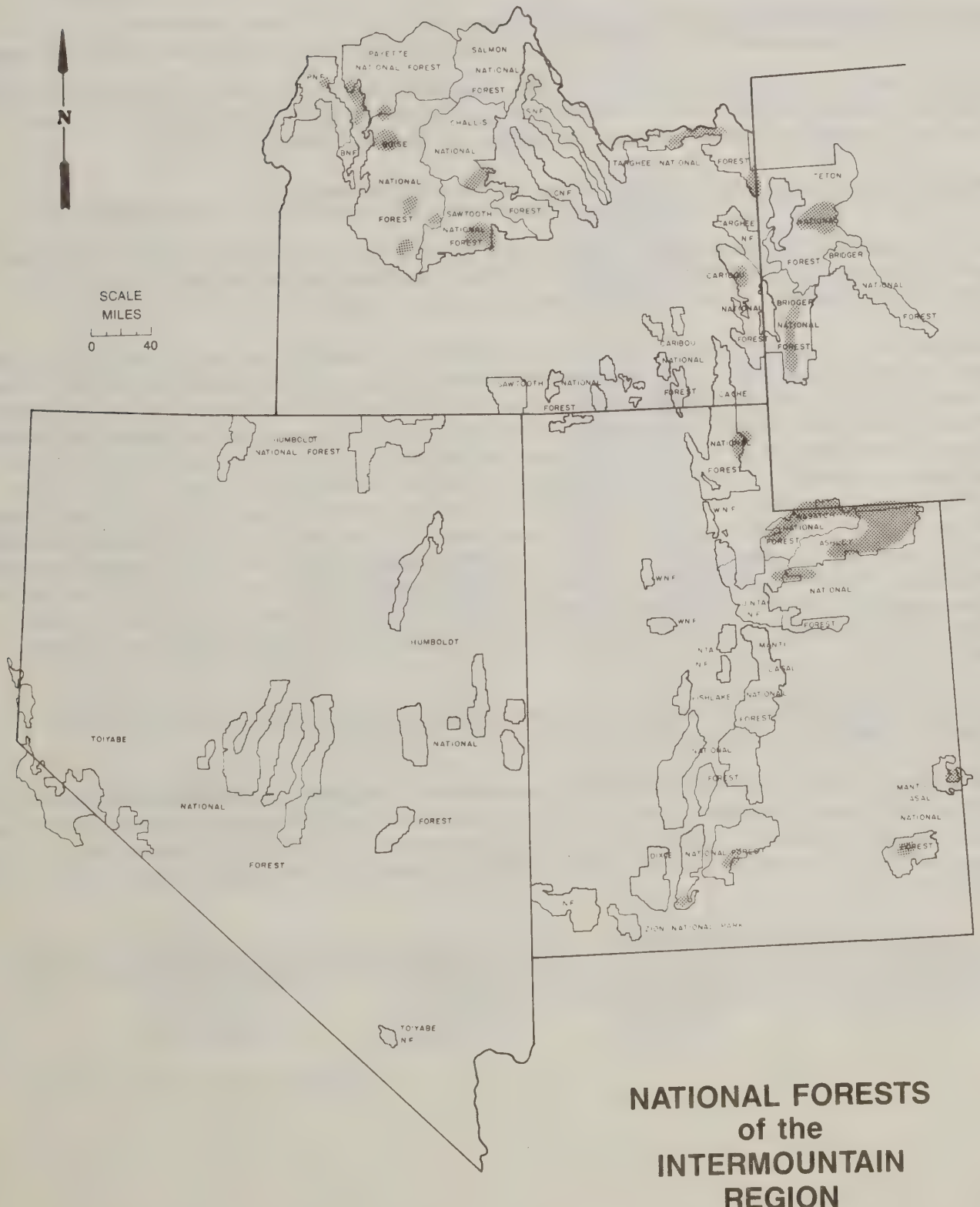
Forest	Mountain Pine Beetle	Trend	Douglas-fir Beetle	Trend	Pine Engraver Beetle	Trend	Spruce Beetle	Trend
Ashley								
1983	1,265,514	Down	85	Up	—	N[1]	—	N
1982	3,531,289		—		—		—	
Boise								
1983	6,442	Down	351	Up	371	Down	—	N
1982	21,178		290		1,263		—	
Bridger-Teton								
1983	11,707	Down	—	Up	—	N	—	N
1982	52,364		—		—		—	
Caribou								
1983	14,703	Up	20	Down	—	N	—	N
1982	12,964		40		—		—	
Challis								
1983	1,190	Up	—	N	—	N	—	N
1982	525		—		—		—	
Dixie								
1983	1,228	Down	—	N	—	N	—	N
1982	2,660		—		—		—	
Fishlake								
1983	—	N	—	N	—	N	—	N
1982	100		—		—		—	
Manti-LaSal								
1983	239	N	224	Up	—	N	—	N
1982	830		—		—		400	
Payette								
1983	5,880	Down	574	Static	—	Down	—	N
1982	30,316		534		217		—	
Salmon								
1983	232	Up	50	Static	354	Up	—	N
1982	34		84		299		—	
Sawtooth								
1983	2,260	Down	20	Down	—	N	—	N
1982	4,097		42		—		—	
Targhee								
1983	6,749	Down	10	Static	—	N	—	N
1982	237,025		—		—		—	
Uinta								
1983	1,240	Up	7	Static	—	N	63	Down
1982	505		20		—		395	
Wasatch-Cache								
1983	80,317	Down	—	Down	—	N	—	N
1982	107,316		110		—		—	
TOTALS								
1983	1,397,701		2,321		725		63	
1982	4,001,203		1,120		1,779		795	

[1] N - Not noted during aerial survey.

TABLE 2. Status of mountain pine beetle infestations by state - 1982.

Land Ownership Class	Outbreak Area (Thousand Acres)	Number of Trees (Thousands)
IDAHO		
National Forest	37.8	34.54
Other Federal	.5	.47
State and Private	4.3	4.13
TOTAL	42.6	39.14
UTAH		
National Forest	264.5	1,326.9
Other Federal	1.0	2.1
State and Private	10.7	19.5
TOTAL	276.2	1,348.5
WYOMING		
National Forest	14.6	11.2
Other Federal	1.8	1.4
State and Private	.3	.6
TOTAL	16.7	13.2

FIGURE 1. Mountain pine beetle throughout the Intermountain Region - 1983.



Pine engraver beetle, *Ips pini* (Say)

Pine engraver beetle activity declined in 1983. Fewer than 1,000 trees across southern Idaho were killed by this beetle. On and adjacent to the Boise NF, mortality was detected in the Boise Basin area on state, private, and federally administered lands and in the Garden Valley and Featherville, Idaho areas. Pine engraver beetle continued its upward trend in the Colson Creek and Owl Creek drainages and in the Granite Mountain-Volter Creek vicinity on the Salmon NF. Specific mortality figures, as noted by aerial detection surveys, are found in Table 1.

Spruce beetle, *Dendroctonus rufipennis* (Kirby)

Spruce beetle infestations declined on the Uinta and Manti-LaSal NF's. Small pockets of tree mortality were observed on the Ashley, Bridger-Teton, Fishlake, and Wasatch NF's. Specific mortality figures, as noted by aerial detection surveys, are found in Table 1.

Western spruce budworm, *Choristoneura occidentalis* Freeman

In 1983, western spruce budworm defoliated approximately 2.8 million acres of Douglas-fir, grand fir, and subalpine fir throughout the Intermountain Region (Figures 2 and 3). Generally, defoliation extent and intensity increased in 1983.

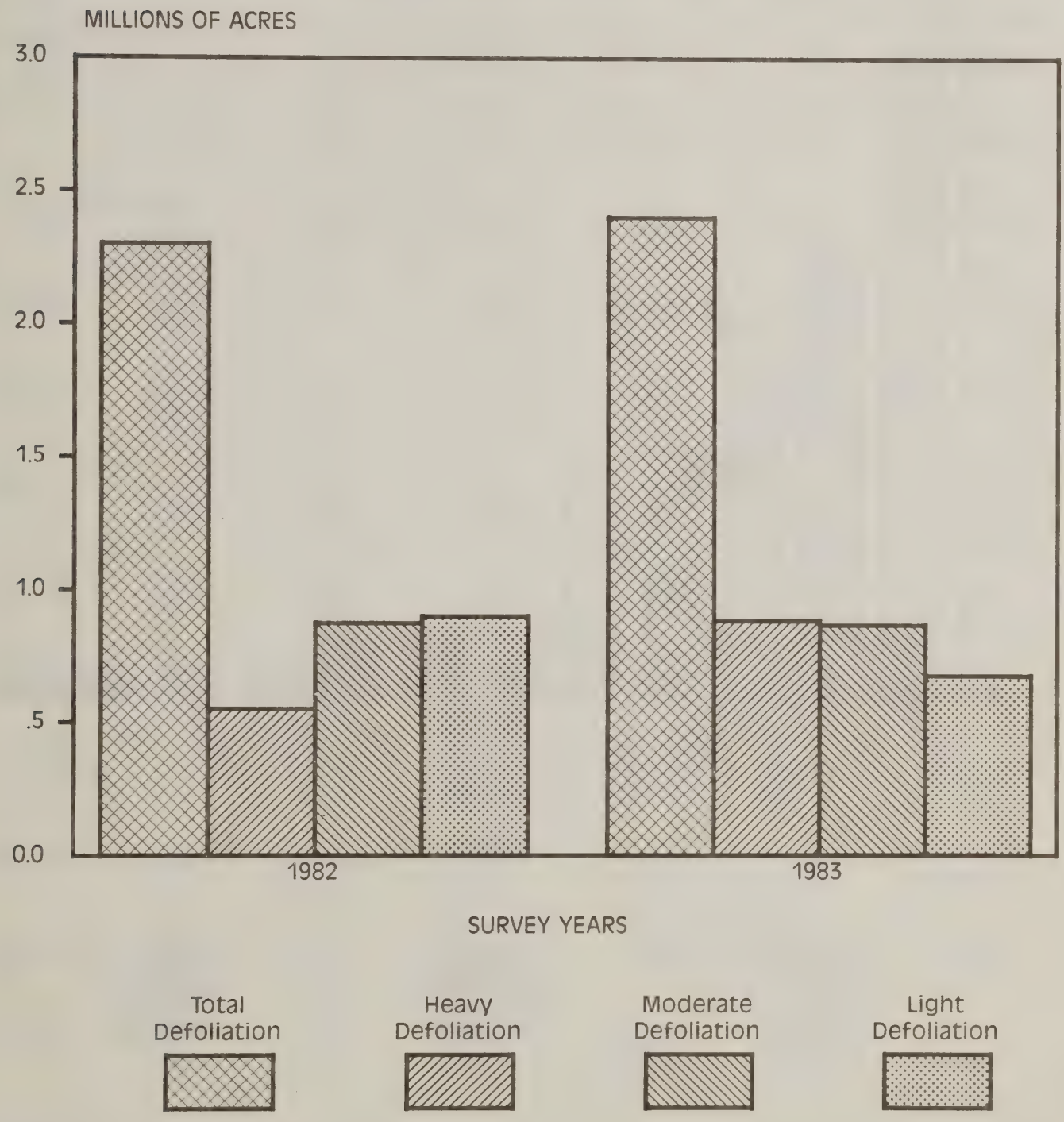
Infestations in southern Idaho expanded on the Boise, Payette, Sawtooth, and Targhee NF's with significant increases in the heavy defoliation category. On the Boise NF much of the infestation expanded into undefoliated Douglas-fir stands on the Idaho City and Boise RD's. Stands in the West Mountain and Sunset Mountain-Pilot Peak area were heavily defoliated. A major increase in the defoliated acreage occurred on the Council and Weiser RD's. The acreage increased from 9,000 acres in 1982 to approximately 30,000 acres in 1983. Heavy defoliation was noted on the Sawtooth NF in 1983 in the Big Smokey Creek drainage west of Hailey, Idaho, and in the Willow Creek area north of Fairfield, Idaho. Defoliation became more extensive on the Targhee NF increasing from 486,000 acres in 1982 to approximately 560,000 acres in 1983. New areas of defoliation were observed on the Ashton RD in the Big Bend areas and south of Island Park Reservoir. Infestations on the Caribou, Challis, and Salmon NF's remained static or declined over the 1982 levels with few new defoliation areas.

In Utah, infestations continued to increase on the Manti-LaSal and Wasatch NF's, and remained static on the Dixie and Fishlake NF's.

Defoliated areas on the Bridger-Teton NF continued to expand with the newest areas of visible defoliation occurring north of the Gros Ventre Range. Defoliation on the Forest was observed from Jackson Lake north of Jackson, Wyoming, south for 70 miles to Smith Fork Guard Station. The amount of visible defoliation increased from 203,846 acres in 1982 to 314,618 in 1983.

A breakdown of defoliation caused by western spruce budworm is contained in Figure 3 and Table 3. Table 4 provides the status of the infestations by state. Figure 4 delineates major infestations throughout the Region by Forest.

FIGURE 2. Intensity of visible defoliation by western spruce budworm in R-4 during 1982 and 1983*.



* As determined by aerial surveys.

FIGURE 3. Visible defoliation in R-4 by western spruce budworm.

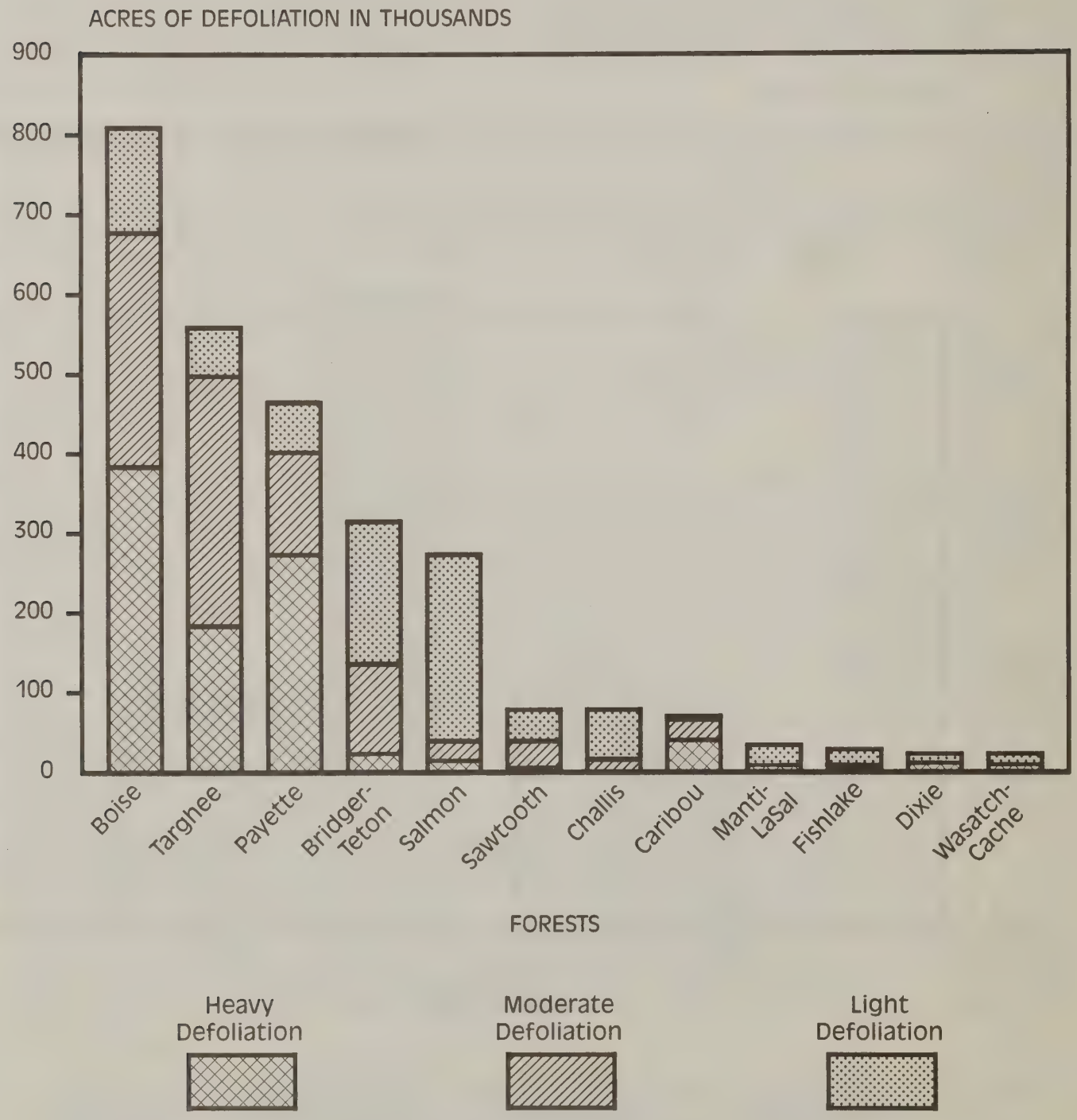


TABLE 3. Acres of defoliation by western spruce budworm as determined by aerial detection survey in the Intermountain Region - 1982-1983.

		Defoliation Categories (acres)				
Forest		Light	Moderate	Heavy	Total	Change
Boise	1983	140,000	290,313	380,421	811,012	+136,531
	1982	140,902	361,643	171,936	674,481	
Bridger-Teton	1983	188,782	101,910	23,926	314,618	+110,772
	1982	30,577	61,154	112,115	203,846	
Caribou	1983	2,868	27,556	49,736	80,160	−65,093
	1982	0	106,817	38,436	145,253	
Challis	1983	79,262	7,613	1,505	88,380	−6,614
	1982	88,120	6,082	792	94,994	
Dixie	1983	10,027	5,448	326	15,801	−3,199
	1982	5,567	7,766	5,667	19,000	
Fishlake	1983	17,197	3,125	1,229	21,551	−449
	1982	12,890	5,888	3,222	22,000	
Manti-LaSal	1983	22,855	4,232	0	27,087	+22,706
	1982	4,381	0	0	4,381	
Payette	1983	69,684	132,875	266,444	469,002	+103,622
	1982	68,640	158,586	138,154	365,380	
Salmon	1983	235,040	37,117	5,510	277,667	−162,940
	1982	396,485	36,946	7,176	440,607	
Sawtooth	1983	49,191	36,545	2,942	88,679	+37,064
	1982	40,892	10,723	0	51,615	
Targhee	1983	64,896	312,858	182,825	560,579	+74,297
	1982	116,985	187,659	181,637	486,282	
Wasatch	1983	10,525	3,606	0	14,130	+8,130
	1982	885	3,639	1,476	6,000	

TABLE 4. Status of western spruce budworm - Idaho, Utah, Wyoming - 1983.

IDAHO

Land Ownership Class	Outbreak Area (Thousand Acres)
National Forest	2,244.5
Other Federal	0.4
State and Private	130.6
TOTAL	2,375.5

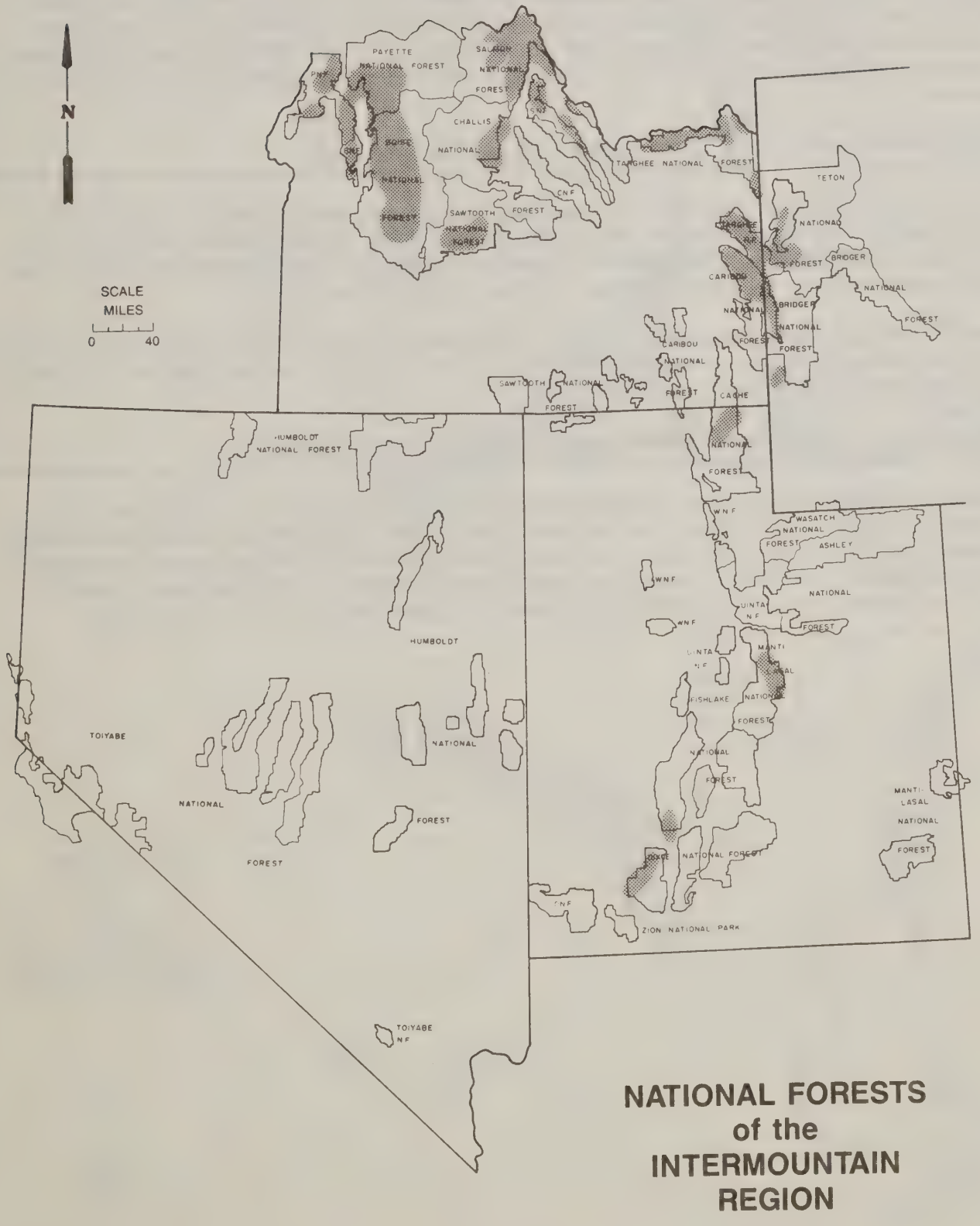
UTAH

National Forest	68.3
Other Federal	—
State and Private	10.3
TOTAL	78.6

WYOMING

National Forest	308.7
Other Federal	20.6
State and Private	1.3
TOTAL	330.6

FIGURE 4. Western spruce budworm defoliation - 1983.



NATIONAL FORESTS of the INTERMOUNTAIN REGION

Pine butterfly, *Neophasia menapia* (Felder & Felder)

In 1983, as in 1982, numerous white butterflies were observed in many ponderosa pine stands on the Boise, Payette, and Salmon NF's. The population was widespread and insect feeding resulted in 16,280 acres of ponderosa pine defoliation. On the Boise NF, defoliation declined somewhat around Dry Buck Summit, an area of ponderosa pine which was heavily defoliated in 1982 but, in contrast, 3,200 acres of ponderosa pine on state, private, and federally administered lands around Cascade, Idaho were heavily defoliated for the first time. Figure 5 outlines this defoliation as noted during aerial detection surveys. Approximately 80 acres of defoliation were further noted by foresters in the Owl Creek drainage on the Salmon NF. Evaluations conducted in the fall, 1983, indicate the infestations will persist in 1984 in spite of regulatory pressure being exerted by predators and parasites.

Douglas-fir tussock moth, *Orgyia pseudotsugata* McDunnough

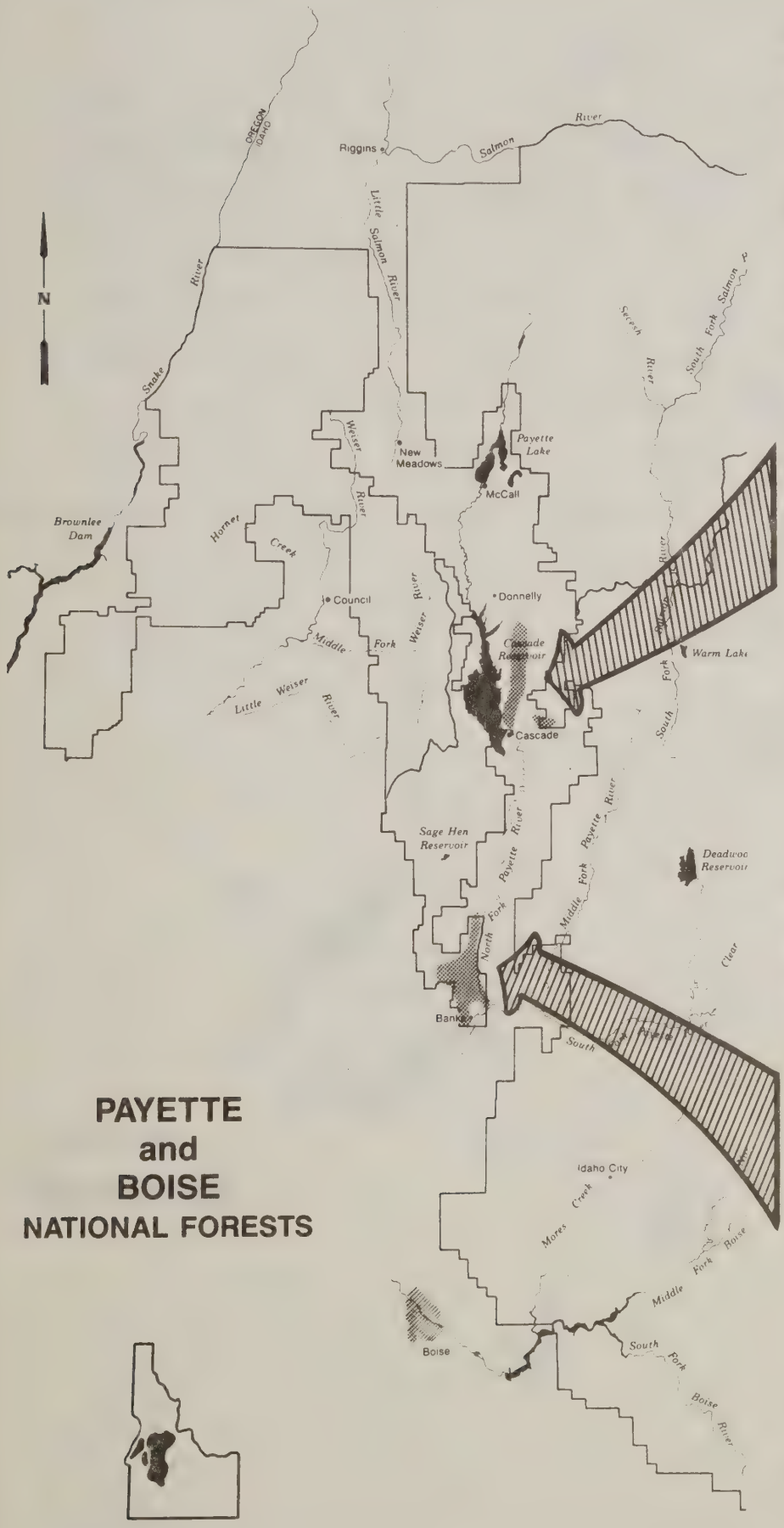
Defoliation of Douglas-fir in the Owyhee Mountains expanded in 1983 to 14,200 acres. Heavy defoliation was prevalent around South Mountain. An evaluation conducted in the fall, 1983, indicates the infestation has generally collapsed, hence defoliation should be much reduced in 1984. Table 5 indicates status of the infestation.

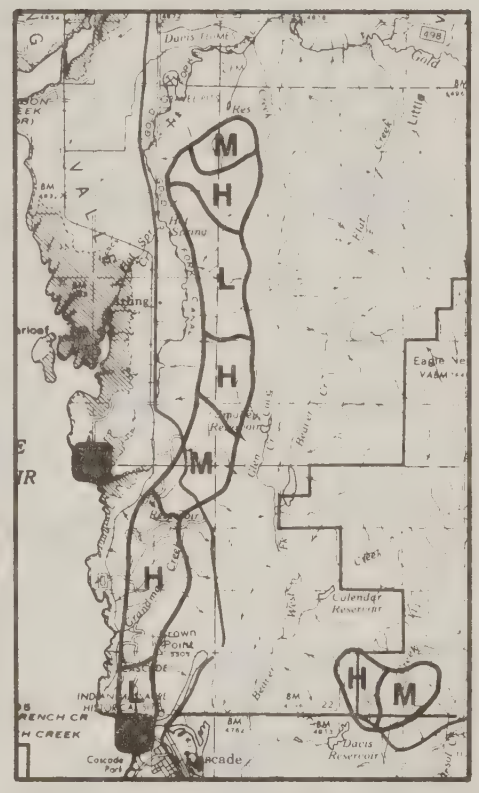
Pheromone detection traps were placed on the Boise, Payette, Salmon, and Sawtooth NF's and state lands around Bellevue, Idaho (Figure 6). Preliminary trap analyses indicate increased Douglas-fir tussock moth activity.

Pyralid moth, unidentified genus close to *Hulstia* or *Staudingeria*

The unidentified pyralid moth larvae, which caused widespread losses of Engelmann spruce seedlings at the Lucky Peak Nursery, Boise NF, in 1982 were not observed in 1983. Evaluations conducted this year to monitor insect populations at the nursery recovered approximately 85 different species of insects. Work continues with the Insect Identification and Beneficial Insect Introduction Institute to learn more about these species.

FIGURE 5. Defoliation of pine butterfly in southern Idaho during 1983.





Defoliation Intensity

L Light

M Moderate

H Heavy

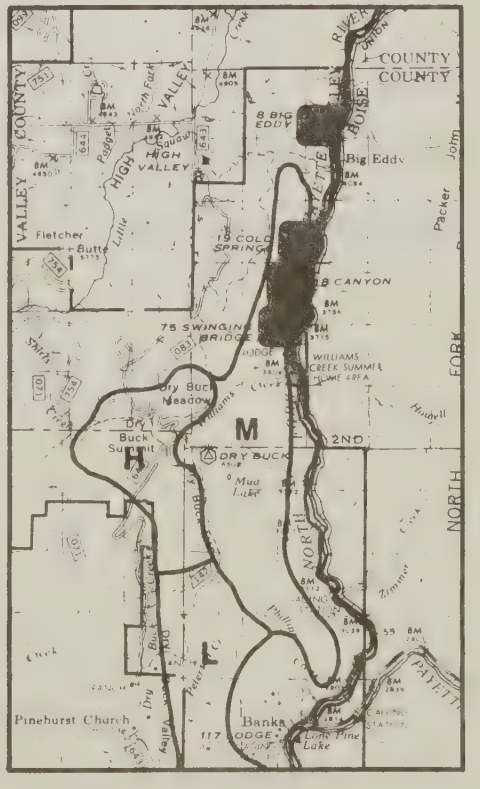


FIGURE 6. Defoliation by Douglas-fir tussock moth and evaluation sites in southern Idaho - 1983.

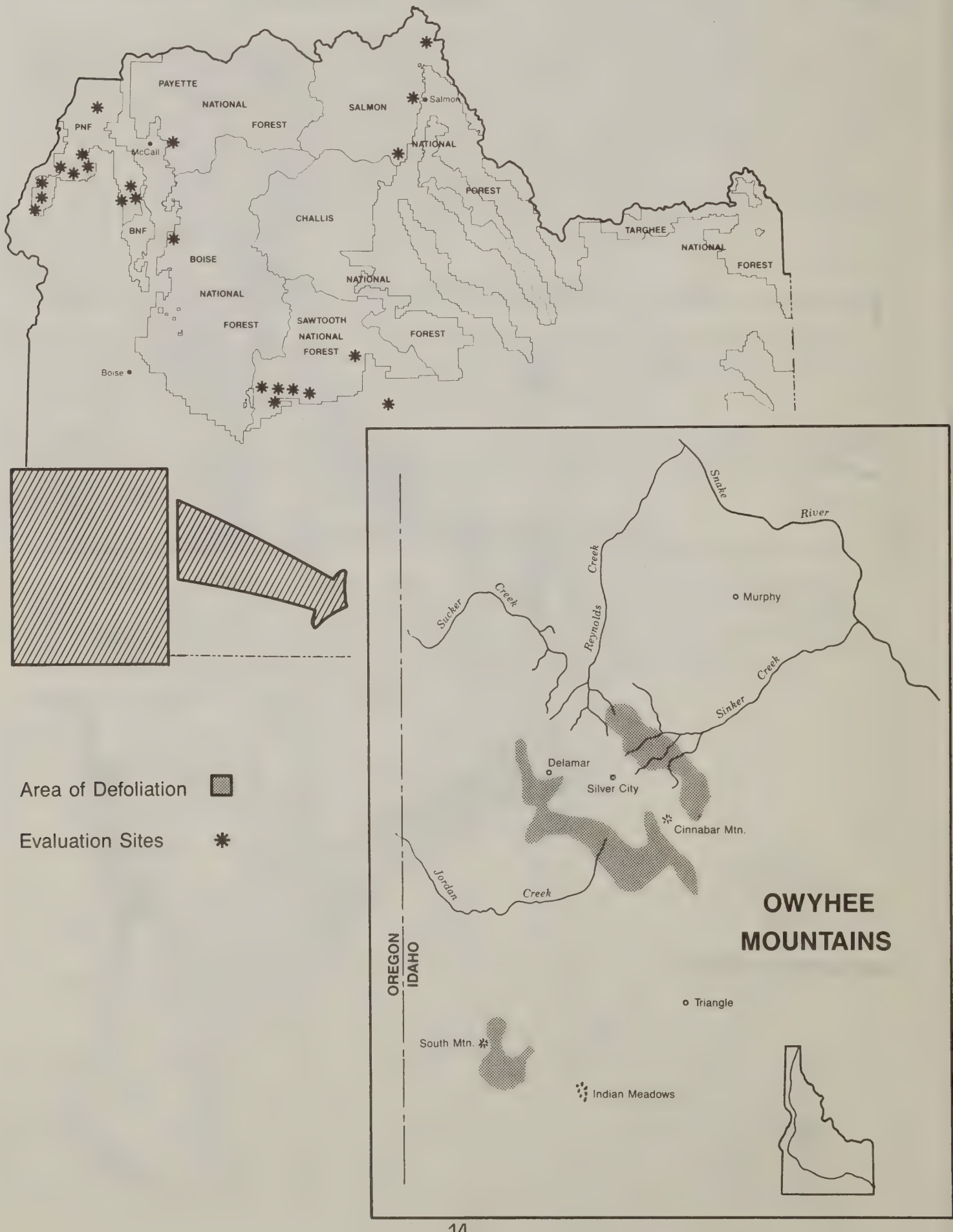


TABLE 5. Status of Douglas-fir tussock moth infestation, 1983.

IDAHO

Outbreak Area - (Acres)				
Land Ownership Class	**Light**	**Moderate**	**Heavy**	**TOTAL**
National Forest	—	—	—	—
Other Federal	2,141	3,049	5,456	10,646
State and Private	713	1,016	1,818	3,547
TOTAL	2,855	4,065	7,274	14,193

SUMMARY
Forest Insect and Disease Conditions
Intermountain Region

Insect	Host	Location	Remarks
Douglas-fir beetle *Dendroctonus pseudotsugae* Hopk.	Douglas-fir	Idaho, Utah, Wyoming	Large pockets of Douglas-fir mortality occurred on the Bridger-Teton, Boise, and Manti-LaSal NF's. Other areas of beetle-activity remained static.
Douglas-fir tussock moth *Orygia pseudotsugata* (McD.)	Douglas-fir	Idaho	Light, moderate, and heavy defoliation occurred on approximately 14,200 acres in the Owyhee Mountains.
Larch casebearer *Coleophora laricella* (Hbn.)	Western larch	Idaho	Only limited ground observations.
Mountain pine beetle *Dendroctonus ponderosae* Hopk.	Lodgepole, ponderosa, and other pines	Idaho, Utah, Wyoming	Mountain pine beetle killed approximately 1.4 million trees in 1983. Beetle populations increased on the Caribou, Challis, and Salmon NF's. A major epidemic continues to cause extensive mortality to the Ashley and Wasatch NF's in northeastern Utah.
Pine butterfly *Neophasia menapia* (Felder & Felder)	Ponderosa pine	Idaho	Moderate to heavy defoliation over 16,280 acres on the Boise and Salmon NF's and private lands east of Cascade Reservoir.
Pine engraver beetle *Ips pini* (Say)	Pines	Idaho	Fewer than 1,000 trees were killed on the Boise, Payette, and Salmon NF's. This constitutes a downward trend over 1982 levels.
Pine needle-sheath miner *Zelleria haimbachi* Busck	Lodgepole pine	Idaho	Over 800 acres of lodgepole pine were defoliated on the Caribou and Targhee NF's.
Pyralid moth	Engelmann spruce	Idaho	No activity was noted this year following widespread seedling losses at the Lucky Peak Nursery in 1982.
Spruce beetle *Dendroctonus rufipennis* (Kby.)	Engelmann spruce	Idaho, Utah	Localized pockets continue to cause mortality on the Uinta and Manti-LaSal NF's. Only limited numbers noted in windthrow on the Payette NF.
Sugar pine tortix *Choristoneura lambertiana* (Busck)	Pines	Idaho	New foliage of scattered sapling- and pole-sized pines defoliated over the state.

SUMMARY (Cont.)
Forest Insect and Disease Conditions
Intermountain Region

Insect	Host	Location	Remarks
Western pine beetle *Dendroctonus brevicomis* LeConte	Ponderosa pine	Idaho, Nevada	Low levels throughout Region.
Western pineshoot borer *Eucosma sonomana* Kearfott	Ponderosa pine	Idaho	Limited number noted throughout southern Idaho.
Western spruce budworm *Choristoneura occidentalis* Free.	Firs, Douglas-fir, western larch, spruce	Idaho, Utah, Wyoming	Approximately 2.8 million acres were defoliated in 1983. Infestations expanded on the Bridger-Teton, Boise, Manti-LaSal, Payette, Sawtooth, Targhee, and Wasatch NF's.
Western Tussock moth *Orgyia vetusta gulosa* Hy. Edwards	Willows, *Ceanothus*	Idaho	Defoliation was insignificant in 1983.

Dwarf mistletoe, *Arceuthobium* spp.

Presuppression surveys and suppression projects were conducted over 12 National Forests in the Intermountain Region. Over 206,000 acres were surveyed and over 2,700 acres were treated through suppression activities (Table 6).

TABLE 6. Acres of dwarf mistletoe presuppression surveys and suppression projects conducted in the Intermountain Region during 1983.

National Forest	Presuppression Survey Acres	Suppression Project Acres
Ashley	10,000	183
Boise	65,000	400
Bridger-Teton	7,365	76
Caribou	6,440	140
Challis	92	0
Dixie	4,700	840
Payette	18,500	275
Salmon	16,315	67
Sawtooth	200	18
Targhee	70,522	622
Toiyabe	4,000	271
Wasatch	3,000	150
TOTAL	206,134	3,042

Annosus root disease, *Fomes annosus* (Fr.) Cke.

A longevity and spread study in the Bureau of Land Management Idaho City ponderosa tree improvement plantation established in 1966 indicates *F. annosus* is still active with an apparent radial spread rate of 1-2 feet per year. Since the first *F. annosus* mortality study of the plantation in 1976, fewer number of trees have been killed from infections each year. New detections of *F. annosus*-caused pine mortality were found on the Boise NF in the Tiger Creek, Humbug Gulch, Horse Heaven Creek, and Big Owl Creek drainages and the Payette NF in the Seid Creek and Filly Creek drainages.

Armillaria root disease, *Armillaria mellea* (Vahl ex. Fr.) Quel.

Although studies have not been conducted in the Intermountain Region to ascertain pathogenicity of this fungus, it is being found with increasing frequency. In 1983, *A. mellea* was found in ponderosa pine regeneration southeast of Fourbit Summit on the Boise NF, and in grand fir on Boise Cascade Corporation lands near Hurdy Creek southwest of Cascade, Idaho. The fungus was also found on mountain pine beetle-killed lodgepole pine on the Wasatch NF. Resin-soaked lesions on the roots indicate that *A. mellea* was parasitizing trees prior to beetle attack. A cooperative study with the Intermountain Forest and Range Experiment Station will investigate the association of *A. mellea* and other diseases with endemic mountain pine beetle in lodgepole pine.

Tomentosus root disease, *Inonotus tomentosus* (Fr.) Gilb.

The white pocket decay caused by this fungus was frequently observed in roots of Douglas-fir, Englemann spruce, and true firs on the Boise, Payette, and Salmon NF's in southern Idaho. In Douglas-fir, *I. tomentosus* was often found associated with *Phaeolus schwinitzii*. Sporophores were found in Engelmann spruce/subalpine fir sites during late August through early September. This fungus was also found fruiting on Engelmann and blue spruce on the Dixie NF in southern Utah. A ground survey of a 1,300-acre stand on the Aquarius Plateau indicated that 9 percent of the trees representing 8 percent of the board foot volume per acre had been killed by the root disease. An additional 29 percent of the trees representing 38 percent of the board foot volume per acre were infested. Many of the live-infested trees had advanced crown symptoms indicating reduced growth. *Inonotus tomentosus* was also isolated from infected blue spruce on the Markagunt Plateau.

Red-brown butt rot, *Phaeolus schweinitzii* (Fr.) Pat.

Red-brown butt rot is often found in windthrown or Douglas-fir beetle-attacked Douglas-fir. Decay and sporophores were found on the Payette NF east of Cougar Mountain and around Railroad Saddle, on the Salmon NF in the West Fork of Blackbird Creek drainage, on the Targhee NF around Rattlesnake Creek, Spruce Creek, and Eccles Butte.

Elytroderma disease, *Elytroderma deformans* (Weir) Darker

Elytroderma disease infects pine needles and may become perennial in twigs and branches of pondrosa pine and infrequently, lodgepole pine. Due to its perennial nature and given appropriate seasonal moisture conditions, infection symptoms chronically appear in localized areas. Areas displaying high levels of infection for the past 2-3 years are on the Boise NF in the Mores Creek drainage, Johnson Creek, and Clear Creek vicinity.

Ink spot, *Sclerotinia bifrans* Whetz., and leaf spot, *Marssonina populi* (Lib) Magn. of Aspen

The incidence of these two leaf diseases on natural and ornamental aspen, prevalent in southern Idaho and northern Utah in 1981 and 1982, declined to levels barely noticeable this year.

SUMMARY
Forest Insect and Disease Conditions
Intermountain Region

Disease	Host	Location	Remarks
Annosus root disease *Fomes annosus* (Fr.) Cke.	Ponderosa pine, Douglas-fir, spruce, true fir	Idaho	Detections of *F. annosus* infections increased throughout southern Idaho.
Armillaria root disease *Armillaria mellea* (Vahl. ex Fr.) Quel.	Grand fir, Douglas-fir, ponderosa pine, lodgepole pine	Idaho, Utah	Found on mature GF and DF, but pathogenicity is uncertain. Found killing young ponderosa pine on the Boise NF. Found on mountain pine beetle-killed lodgepole pine on the Wasatch NF.
Aspen trunk rot *Phellinus tremulae* (Bond) Bond & Boriss	Aspen	Idaho, Utah, Wyoming, Nevada	Prevalent on the Sawtooth NF, also detected in most aspen stands throughout the Region.
Comandra rust *Cronartium comandrae*	Lodgepole pine, ponderosa pine	Idaho, Utah, Wyoming	Caused topkill to lodgepole pine in eastern Idaho, northern Utah, and western Wyoming.
Cytospora canker *Cytospora chrysosperma* Pers. ex Fr.	Aspen	Idaho	Caused branch mortality to mature aspen in southern Idaho.
Dasyscypha cankers *Dasyscypha* sp.	Ponderosa pine	Idaho	Found infecting snow damaged pine regeneration on the Boise NF.
Dutch elm disease *Ceratocystis ulmi* (Buism.) C. Mor.	American elm	Idaho, Utah	Continued infections in Boise, Idaho, and along Wasatch Front in Utah.
Dwarf mistletoe *Arceuthobium* spp.	Douglas-fir, ponderosa pine, lodgepole pine, western larch, Jeffrey pine	Idaho, Utah, Wyoming, Nevada	These pests continued to have significant impacts on growth and yield of their host species. Suppression projects removed infected overstory trees from 3,042 acres throughout the Region.
Elytroderma disease *Elytroderma deformans* (Weir) Darker	Ponderosa pine	Idaho	High levels sustained from 1982 infection levels, especially Mores Creek, on the Boise NF.
Fir broom rust *Melampsorella caryophyllacearum* Schroet.	Subalpine fir	Idaho, Utah, Wyoming	Scattered incidence throughout host type.

SUMMARY (Cont.)
Forest Insect and Disease Conditions
Intermountain Region

Disease	Host	Location	Remarks
Greybeard *Lophodermium* spp.	Ponderosa pine	Idaho	Ponderosa pine of all age classes severely affected in Idaho City and Garden Valley, Idaho areas.
Indian paint fungus *Echinodontium tinctorium* (E. & E.) E. & E.	Grand fir	Idaho	Static in old-growth stands.
Ink spot of aspen *Ciborinia whetzelli* (Seaver) Seaver	Aspen	Idaho	Continued infections on Boise and Targhee NF's.
Lodgepole pine needle cast *Lophodermella concolor* (Dearn.) Darker	Lodgepole pine	Idaho	Light levels of infection throughout southern Idaho.
Marssonina blight *Marssonina populi* (Lib.) Magn.	Aspen	Idaho, Wyoming, Utah	Scattered incidence throughout host type.
Meria needle disease *Meria laricis* Vuill.	Western larch	Idaho	Very low levels of discoloration and defoliation on Boise, and Payette NF's.
Needle rust of fir *Pucciniastrum* spp.	Firs	Idaho	Light levels of infection in southwestern Idaho.
Western pine aster rust *Coleosporium asterum* (Diet.) Syd.	Lodgepole pine	Idaho	Rust infections found on lodgepole pine regeneration on Targhee NF.
Dothistoema needle blight *Dothistroma pini* Hulb.	Ponderosa pine	Idaho	Severe on pine in only known occurrence in Idaho (confluence of Lightning Creek and Middle Fork Weiser River).
Red-brown butt rot *Phaeolus schweinitzii* (Fr.) Pat.	Douglas-fir	Idaho	Usually found in stands exceeding 120 years old, often experiencing windthrow or bark beetle activity.

SUMMARY (Cont.)
Forest Insect and Disease Conditions
Intermountain Region

Disease	Host	Location	Remarks
Red ring rot *Phellinus pini* (Thore: Fr.) Pilat.	Firs, pines, Douglas-fir, spruce, western larch	Idaho, Utah	Along with *Fomes annosus,* infected roots and butts of hosts in southwestern Idaho. Found on spruce in southern Utah.
Douglas-fir needle cast *Rhabdocline pseudotsugae* Syd.	Douglas-fir	Idaho	Scattered incidence throughout host type.
Spruce broom rust *Chrysomyxa arctostaphyli* Diet.	Engelmann spruce	Idaho, Utah	Scattered incidence throughout host type.
Stalactiform rust *Cronartium coleosporioides* Arth. f. *coleosporioides*	Lodgepole pine	Idaho, Utah	Scattered throughout host type in southcentral Idaho and northern Utah. Notable along North Fork Trinity Creek, Boise NF.
Tomentosus root disease *Inonotus tomentosus* (Fr.) Gilb.	Spruce, Douglas-fir, true firs	Idaho, Utah	Frequently observed in roots of Douglas-fir, Engelmann spruce, and true firs on the Boise, Payette, and Salmon NF's. Found causing mortality and windthrow of blue and Engelmann spruce on the Dixie NF.
Western gall rust *Endocronartium harknessii* (J. P. Moore) Hirat.	Ponderosa and lodgepole pine	Idaho	Static in host type.

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ANSWER TO COVER STORY

The correct answer is C - Comandra rust. This fungus causes cankers which can girdle the stem and cause top kill. Stimulation brooms below the girdle are easily confused with witches' brooms caused by dwarf mistletoe infection. All of the pests listed were found in close proximity to the depicted tree.